PS1: Matter and Its Interactions

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
PS1.A: Structure and Properties of Matter			2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. 2-PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. 2-PS1-3. Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.			5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen. 5-PS1-2. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. 5-PS1-3. Make observations and measurements to identify materials based on their properties.

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
PS1.B: Chemical Reactions			2-PS1-4. Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.			5-PS1-2. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. 5-PS1-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances.
There are no Performance Expectations for PS1.C: Nuclear Processes in Grades Kindergarten through Grade 5.						

PS2: Motion and Stability: Forces and Interactions

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
PS2.A: Forces and Motion	K-PS2-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. K-PS2-2. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.			3-PS2-1. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. 3-PS2-2. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.		

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
PS2.B: Types of Interactions	K-PS2-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.			3-PS2-1. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. 3-PS2-3. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. 3-PS2-4. Define a simple design problem that can be solved by applying scientific ideas about magnets.		5-PS2-1. Support an argument that the gravitational force exerted by Earth on objects is directed down.
There are no Performance Expectations for PS2.C Stability and Instability in Physical Systems in Kindergarten through Grade 5.						

PS3: Energy

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
PS3.A: Definitions of Energy					4-PS3-1. Use evidence to construct an explanation relating the speed of an object to the energy of that object. 4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. 4-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide.	
PS3.B: Conservation Of Energy and Energy Transfer	K-PS3-1. Make observations to determine the effect of sunlight on Earth's surface. K-PS3-2. Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.				4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. 4-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide. 4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	5-PS3-1. Use models to describe that energy in animals' food (used for body repair, growth, and motion and to maintain body warmth) was once energy from the sun.

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
PS3.C: Relationship between Energy and Forces	K-PS2-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.				4-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide.	
PS3.D: Energy in Chemical Processes and Everyday Life					4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	

PS4: Waves and Their Applications in Technologies for Information Transfer

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
PS4.A: Wave Properties		1-PS4-1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.			4-PS4-1. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.	
PS4.B: Electromagnetic Radiation		1-PS4-2. Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated. 1-PS4-3. Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.			4-PS4-2. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.	
PS4.C: Information Technologies and Instrumentation		1-PS4-4. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.			4-PS4-3. Generate and compare multiple solutions that use patterns to transfer information.	

LS1: From Molecules to Organisms: Structures and Processes

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
LS1.A Structure and Function		1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.			4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	
LS1.B: Growth and Development of Organisms		1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.		3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.		
LS1.C: Organization for Matter and Energy Flow in Organisms	K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.					5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water.
LS1.D: Information Processing		1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.			4-LS1-2. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.	

LS2: Ecosystems: Interactions, Energy, and Dynamics

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
LS2.A: Interdependent Relationships in Ecosystems			2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow. 2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.			5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
LS2.B: Cycles of Matter and Energy Transfer in Ecosystems						5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
No Performance Expectations for LS2.C: Ecosystem Dynamics, Functioning and Resilience in grades Kindergarten through Grade 5.						
LS2.D: Social Interactions and Group Behavior				3-LS2-1. Construct an argument that some animals form groups that help members survive.		

LS3: Heredity: Inheritance and Variation of Traits

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
LS3.A: Inheritance of Traits		1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.		3-LS3-1. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. 3-LS3-2. Use evidence to support the explanation that traits can be influenced by the environment.		
LS3.B: Variation of Traits		1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.		3-LS3-1. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. 3-LS3-1. Use evidence to support the explanation that traits can be influenced by the environment.		

LS4: Biological Evolution: Unity and Diversity

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
LS4.A: Evidence of Common Ancestry and Diversity				3-LS4-1. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.		
LS4.B: Natural Selection				3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.		
LS4.C: Adaptation				3-LS4-4. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.		
LS4.D: Biodiversity and Humans			2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.	3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.		

ESS1: Earth's Place in the Universe

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
ESS1.A: The Universe and Its Stars		1-ESS1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted.				5-ESS1-1. Support an argument that the apparent brightness of the sun and stars is due to their relative distances from the Earth.
ESS1.B: Earth and the Solar System		1-ESS1-2. Make observations at different times of year to relate the amount of daylight to the time of year.				5-ESS1-2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.
ESS1.C: The History of Planet Earth			2-ESS1-1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly.		4-ESS1-1. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.	

ESS2: Earth's Systems

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
ESS2.A: Earth Materials and Systems			2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.		4-ESS2-1. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.	4-ESS2-1. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
ESS2.B: Plate Tectonics and Large-Scale System Interactions			2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.		4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth's features.	
ESS2.C: The Role of Water in Earth's Surface Systems			2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be solid or liquid.			5-ESS2-2. Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
ESS2.D: Weather and Climate	K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time.			3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. 3-ESS2-1. Obtain and combine information to describe climates in different regions of the world.		
ESS2.E: Biogeology	K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.				4-ESS2-1. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.	

ESS3: Earth and Human Activity

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
ESS3.A: Natural Resources	K-ESS3-1. Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.				4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.	
ESS3.B: Natural Hazards	K-ESS3-1. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.			3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.	4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	
ESS3C: Human Impacts on Earth Systems	K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.					5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
No Performance Expectations for ESS3.D Global Climate Change in grades K through 5.						